



## BIOLOGY NMDCAT EARLIER PREP

### PMC UNIT WISE TEST UNIT-14

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**SAEED MDCAT TEAM**

#### TOPIC:

✓ **Biotechnology**

- Q.1** It deals with the use of living organisms, systems or processes in manufacturing and service industries:
- A. Biochemistry  
C. Molecular Biology  
B. Biotechnology  
D. Microbiology
- Q.2** Arrange the following events in the proper sequence for genetic engineering:
1. Ligate gene into bacterial plasmid
  2. Isolate DNA from organisms containing desired gene
  3. Introduce cloned gene into bacterial cells
  4. Fragment DNA with restriction enzyme
- A. 1 → 2 → 3 → 4  
C. 2 → 4 → 1 → 3  
B. 2 → 1 → 4 → 3  
D. 2 → 4 → 3 → 1
- Q.3** To cure Parkinson's disease, \_\_\_\_\_ producing cells could be grafted directly into the \_\_\_\_\_.
- A. Glutamate, spinal cord  
C. Acetylcholine, brain  
B. Dopamine, brain  
D. Serotonin, spinal cord
- Q.4** In recombinant DNA technology, \_\_\_\_\_ are tools for manipulating DNA.
- A. Expression system  
C. Chromosomes  
B. Enzymes  
D. Vectors
- Q.5** The DNA molecule synthesized by using reverse transcriptase is called:
- A. rDNA  
C. cDNA  
B. Mutant DNA  
D. Chimeric DNA
- Q.6** Restriction endonucleases cleave the \_\_\_\_\_ of duplex DNA.
- A. Nitrogenous base  
C. Pentose sugar  
B. Phosphodiester bond  
D. Hydrogen bond
- Q.7** Which of the following is the source of restriction endonucleases?
- A. Bacteria  
C. Fungi  
B. Algae  
D. Animal-like protists
- Q.8** What is the function of a vector in genetic engineering?
- A. Separate fragments of DNA  
C. Carry DNA into host cell  
B. Link together fragments of DNA  
D. Make millions of copies of DNA
- Q.9** Restriction enzyme can work only when they recognized their specific:
- A. Nucleotide sequences  
C. Palindromic sequences  
B. Sticky ends  
D. DNA molecule
- Q.10** Which of the following chemical enhances the uptake of recombinant DNA by bacterial cells?
- A. Sodium chloride  
C. Calcium chloride  
B. Silicone carbide  
D. Cesium chloride
- Q.11** The enzyme responsible for joining DNA molecules from at least two different sources is:
- A. DNA helicase  
C. DNA polymerase  
B. Restriction endonuclease  
D. DNA ligase
- Q.12** Which of the following virus can be used to transfer chimeric DNA into bacterial cell?
- A. Lambda phage  
C. T<sub>4</sub> phage  
B. HIV  
D. HCV



- Q.13** EcoRI cuts palindrome sequence which produces overhanging stretches called sticky ends on each strand. These are named sticky ends because:
- They can combine with any DNA
  - They facilitate the action of the enzyme DNA ligase
  - They form hydrogen bonds with their complementary cut counterpart
  - They spontaneously form phosphodiester bonds with mRNA molecules
- Q.14** The one which is made up of radioactive or fluorescently labeled nucleotides and is always single stranded:
- Primers
  - Probes
  - Genomic library
  - Chimeric DNA
- Q.15** Taq polymerase is used in:
- Bacterial cloning
  - PCR
  - Gene sequencing
  - Recombinant DNA technology
- Q.16** All of the following are true regarding PCR except:
- Taq polymerase is heat sensitive
  - Gene specific primers are required
  - Can create millions of DNA copies quickly
  - Different steps involves different temperature
- Q.17** Restriction enzymes are molecular scissors used in genetic engineering to cut up DNA. In nature, where are these enzymes produced and for what purpose?
- In viruses; to splice host cell DNA
  - In yeast cell; to defend against foreign DNA invasion
  - In bacteria; to defend against viral invasion
  - In viruses; to defend itself against mutation
- Q.18** A method used to detect a particular DNA sequence within a mixture of many DNA fragments is:
- DNA sequencing
  - DNA hybridization
  - DNA fingerprinting
  - Gel electrophoresis
- Q.19** When bacteria are genetically engineered to produce human insulin, the enzyme used in the procedure are:
- DNA ligase
  - Restriction endonuclease
  - Reverse transcriptase
- In which order, these enzymes are used?

	First	→	Last
A.	1	3	2
B.	2	3	1
C.	2	1	3
D.	3	2	1

- Q.20** Phage mediated transfer of genetic material into a bacterium:
- Conjugation
  - Transduction
  - Transformation
  - Transfection
- Q.21** In PCR, the maximum temperature is required for:
- Denaturation
  - Extension
  - Annealing
  - DNA isolation from source
- Q.22** It is the correct sequence of different steps in PCR:
- Addition of Primer → Polymerization → Denaturation → Repetition
  - Denaturation → Addition of Primer → Polymerization → Repetition
  - Polymerization → Addition of Primer → Denaturation → Repetition
  - Repetition → Addition of Primer → Denaturation → Polymerization
- Q.23** Disputed parentage is solved by using:
- PCR amplification
  - DNA fingerprinting
  - DNA sequencing
  - Recombinant DNA technology
- Q.24** Gene for the vascular endothelial growth factor is used in:
- Cystic fibrosis
  - Cancer therapy
  - Coronary artery angioplasty
  - SCID treatment
- Q.25** In cystic fibrosis, liposome-microscopic particles are used which are coated with:
- Healthy gene
  - Chloride channel protein
  - Mutant gene
  - Lipid





- Q.26 Which of the following is the initial step during analysis of DNA?  
A. Isolation of DNA from source      B. Gel electrophoresis  
C. Treatment with restriction enzymes      D. DNA hybridization
- Q.27 All of the following can be used during DNA fingerprinting except:  
A. Restriction enzymes      B. X-ray film  
C. Radio-labeled probe      D. DNA ligase
- Q.28 Chemically, aspartame is a/an:  
A. Amino acid      B. Tripeptide  
C. Dipeptide      D. Oligopeptide
- Q.29 The tiny and self-sealing holes in the protoplast can be generated through:  
A. Mechanical shaking      B. Electric current  
C. By using chemicals      D. Treatment with various enzymes
- Q.30 Polyhydroxy butyrate, bio-degradable plastic, can be produced by genetically engineered:  
A. Bacterial species      B. Fungal species  
C. Animal like protists      D. Weed species
- Q.31 After successful completion of job, transgenic bacteria undergo death due to:  
A. Application of antibiotics      B. Suicide genes  
C. Production of self-destructive bacteriocins      D. Treatment with steam at high pressure
- Q.32 The Biotechnological product which can be used during surgery for preventing blood clotting is:  
A. Lovastatin      B. Anti-thrombin III  
C. Heparin      D. Warfarin
- Q.33 Silicon carbide needles are used in:  
A. Microinjection method      B. Maxam-Gilbert method  
C. Vortex mixing method      D. Sanger method
- Q.34 An enzyme involved in maturation of 'B' and 'T' lymphocytes is:  
A. Endonuclease      B. Adenosine deaminase  
C. Exonuclease      D. Reverse transcriptase
- Q.35 Genetically engineered bacteria are produced by inserting:  
A. Plasmids DNA      B. Vehicle DNA  
C. Chimeric DNA      D. Phage DNA
- Q.36 PCR is related to:  
A. DNA cloning      B. DNA hybridization  
C. DNA amplification      D. DNA mutation
- Q.37 The role of DNA ligase in the construction of a recombinant DNA molecule is:  
A. Formation of phosphodiester bond between two DNA fragments  
B. Ligation of all purine and pyrimidine bases  
C. Formation of hydrogen bonds between sticky ends of DNA fragments  
D. Fine trimming of stick ends to make them receptive for vector
- Q.38 Which of the following steps are catalyzed by Taq polymerase in a PCR reaction?  
A. Denaturation of template DNA      B. Extension of primer end on template DNA  
C. Annealing of primers to template DNA      D. Isolation of gene from source
- Q.39 Which one of the following is the preferable vehicle for obtaining a biotechnology product?  
A. Blood      C. Urine  
C. Lymph      D. Plasma
- Q.40 Which one of the following is now being commercially produced by biotechnological procedures?  
A. Nicotine      B. Quinine  
C. Morphine      D. Insulin
- Q.41 Given below is a sample portion of DNA strand giving the base sequence on the opposite strands. What is so special shown in it?  
5' GAATTC 3'  
3' CTTAAG 5'  
A. Point mutation      B. Palindromic sequence of base pairs  
C. Start codon at the 5' end      D. Replication completed



- Q.42 In DNA finger printing process, the use of \_\_\_\_\_ produces distinctive pattern on autoradiography or X-ray film.
- A. Restriction enzymes  
B. Primers  
C. Gel electrophoresis  
D. Probes for genetic markers
- Q.43 Cystic fibrosis patients lack a gene that codes for trans-membrane carrier of:
- A.  $\text{Na}^+$  ion  
B.  $\text{Ca}^{+2}$  ions  
C.  $\text{Cl}^-$  ions  
D.  $\text{K}^+$  ion
- Q.44 A technique in transgenic animals in which desired gene is inserted into the eggs of animal is called:
- A. Embryonic stem cell mediated transfer  
B. Retro-virus mediated gene transfer  
C. Microinjection  
D. Virus vectors
- Q.45 Plasmids were discovered during the study of which characteristic of bacteria?
- A. Life cycle  
B. Nutrition  
C. Sex life  
D. Respiration
- Q.46 Which one of the following is not related to PCR?
- A. Amplification of DNA  
B. *In vitro* method  
C. Use to obtain protein  
D. Quick method
- Q.47 In gel electrophoresis, DNA fragments:
- A. Pulled toward the end by gravity  
B. Attracted to the positively charged end of the gel  
C. Attracted to complementary DNA fragments  
D. Attracted to the negatively charged end of the gel
- Q.48 pSC101 has antibiotic resistance gene for:
- A. Ampicillin  
B. Tetracycline  
C. Streptomycin  
D. Kanamycin
- Q.49 All of the following biotechnology products are produced by using transgenic bacteria except:
- A. Human growth hormone  
B. Haemophilia factor VIII  
C. Tissue plasminogen activator  
D. Hepatitis C vaccine
- Q.50 A device used to bombard a callus with DNA coated microscopic metal particles is:
- A. Micro injector  
B. Stereo microscope  
C. Gene gun  
D. Thermocycler

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# Biology Test 14 Key

1) B

2) C

3) B

4) B

5) C

6) B

7) A

8) C

9) C

10) C

11) D

12) A

13) C

14) B

15) B

16) A

17) C

18) B

19) D

20) B

21) A

22) B

23) B

24) C

25) A

26) A

27) D

28) C

29) B

30) D

31) B

32) B

33) C

34) B

35) C

36) C

37) A

38) B

39) B

40) D

41) B

42) D

43) C

44) C

45) C

46) C

47) B

48) B

49) D

50) C

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